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Reid H. Bowman

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EXAMINER

KRECK, JOHN J

ART UNIT

PAPER NUMBER

3673

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



### DETAILED ACTION

The amendment dated 6/16/06 has been entered.

#### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the separate and/or first and second injection points must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 7, 12, 14, 23, 24, and 26-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilson (U.S. Patent number 5,525,008).

Wilson teaches the process including the injecting a first oxidant (peroxide—col. 9, line 17) in to the aquifer; and injecting a compressed gas ( col. 9, lines 30-37---see also figure 4) as called for in claim 1. With regards to the newly added limitations of injecting at first and second injection points: see, e.g. col. 13, line 5 “one or more injectors”. With regards to the new limitation of first and second oxidant: it is noted that the claim is broad enough to cover an instance where the first and second oxidants are identical (H<sub>2</sub>O<sub>2</sub>) but injected at different points (i.e. the first oxidant is H<sub>2</sub>O<sub>2</sub>, and it's injected at the first injection point; the second oxidant is also H<sub>2</sub>O<sub>2</sub>, but it's the “second” oxidant because it's injected at the “second” point.) This instance is plainly anticipated by Wilson.

Wilson teaches the forcing (see figure 4 “mechanical circulation” and “dispersion effect”) as called for in claim 2.

Wilson teaches the peroxide as called for in claim 7.

With regards to claim 12: Wilson teaches the injection the second oxidant into the aquifer.

Wilson teaches at least the air or nitrogen as called for in claim 14.

Wilson teaches the spaced points as called for in claim 26.

Wilson teaches the discontinuing of injection as called for in claim 27. Wilson teaches at least stopping and restarting the injection (e.g. col. 9, line37+). It is noted that this claim does not require any subsequent reinjection, and is broad enough to cover an instance where the process is terminated following complete remediation.

Regarding independent claim 23:

Wilson teaches introducing first oxidant, second oxidant, and compressed gas; wherein the first and second oxidants are injected from separate points as called for in claim 23. Note that this claim is interpreted more broadly than previously: see the explanation of first/second oxidants under the rejection of claim 1.

With regards to claim 24: the Wilson process allows for such injection (note that the claim fails to positively recite any process step).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3-6, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson.

Wilson fails to explicitly disclose the "saturated" or "smear" zones; however, since Wilson teaches the process is used in and above the groundwater zone, one of ordinary skill in the art would have found it obvious to have used the process in the saturated or smear zones as called for in claims 3 and 4.

Wilson teaches the forcing groundwater as called for in claim 5.

With regards to claim 6; Wilson teaches the discontinuing (see col. 9, lines 39-45); the returning would inherently result from discontinuing.

With regards to claim 28: See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results). Applicant has not alleged any unexpected results from performing the steps in any order.

3. Claims 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson in view of Briggs, et al. (U.S. Patent number 6,352,387).

Wilson teaches sequentially injecting hydrogen peroxide and compressed gas at first and second injection points. Wilson lacks the injection of ozone/oxygen mixture.

Briggs teaches (5:64-6:4) a similar process which includes an ozone/oxygen mixture, and also indicates the desirability of using such in sequence with H<sub>2</sub>O<sub>2</sub>

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("some or all of these reagents added simultaneously or in series in order to accomplish the desired organic contaminant destruction or removal.")

One of ordinary skill in the art would have found it obvious to have modified the Wilson process to have included injection of ozone/oxygen mixture as called for in claim 16, based on the teaching in Briggs.

Wilson teaches the desorbed contaminants as called for in claim 17.

With regards to claim 18; Wilson teaches the stopping of injection (see col. 9, lines 39-45); the allowing the water to return would inherently result from stopping.

With regards to claim 19: Wilson teaches at least stopping and restarting the injection (e.g. col. 9, line37+): this suggests to one of ordinary skill in the art the step of periodically cycling the injection step.

With regards to claim 20: the Wilson process allows for such injection (note that the claim fails to positively recite any process step "can be sequentially injected" is not a process step, it is a functional limitation).

Wilson teaches the injection from multiple points as called for in claims 21 and 22.

#### ***Allowable Subject Matter***

4. Claims 25 and 9-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

5. Applicant's arguments filed 6/16/06 have been fully considered but they are not persuasive.

Applicant's #3:

Applicant has argued that Wilson teaches the simultaneous injection of oxidant and compressed air. This is not persuasive: see col. 13, lines 3-12.

Applicant has argued that Wilson lacks the first and second points. This has been addressed above, under the rejection of claim 1.

Applicant's #4:

Applicant has not made any further substantive arguments in this section.

Applicant's #5:

a. Claim 9 has been found allowable for its dependency from claims 1 and 25.

b. Applicant has argued that neither Wilson nor Briggs teach the sequential injection of H<sub>2</sub>O<sub>2</sub>, ozone/oxygen, and compressed air. This is not persuasive: see col. 13, lines 3-12 of Wilson, and col. 6, lines 2-4 of Briggs. It is noted that claim 16 calls for "gas" not "air"; however compressed air is taught by both references.



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Applicant has argued that Wilson lacks the first and second points. This has been addressed above, under the rejection of claim 1.

c. Applicant has argued that Wilson cannot or does not teach intermittent injection. This is not persuasive: see . col. 9, line37+.


Applicant has argued that neither Wilson not Briggs teach the separate injection points: This has been addressed above, under the rejection of claim 1.

Applicant is reminded that claim 23 is considered to be broader than previously, warranting a new ground of rejection under 102. For this reason, this office action is not made final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kreck whose telephone number is 571-272-7042. The examiner can normally be reached on Mon-Thurs 530am-2pm; Fri: telework.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia Engle can be reached on 571-272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John Kreck  
Primary Examiner  
Art Unit 3673

27 September 2006